

AD-A181 023

A COMPARISON OF THE EFFECTIVENESS OF THE AIR COMMAND  
AND STAFF COLLEGE SEMINAR AND CORRESPONDENCE PROGRAMS  
(U) AIR COMMAND AND STAFF COLL MAXWELL AFB AL K W ROY  
APR 87 ACSC-87-2175 F/G 3/9

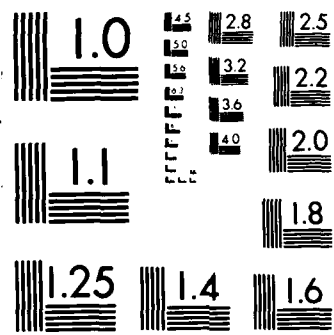
171

UNCLASSIFIED

F/G 5/9

NL

END



AD-A181 023



# AIR COMMAND AND STAFF COLLEGE

## STUDENT REPORT

A COMPARISON OF THE EFFECTIVENESS  
OF THE AIR COMMAND AND STAFF COLLEGE  
SEMINAR AND CORRESPONDENCE PROGRAMS

MAJOR KENNETH W. ROY

87-2175

*"insights into tomorrow"*

DTIC  
SELECTE

JUN 11 1987

CS  
E

This document has been approved  
for release and sale; its  
distribution is unlimited.

## DISCLAIMER

The views and conclusions expressed in this document are those of the author. They are not intended and should not be thought to represent official ideas, attitudes, or policies of any agency of the United States Government. The author has not had special access to official information or ideas and has employed only open-source material available to any writer on this subject.

This document is the property of the United States Government. It is available for distribution to the general public. A loan copy of the document may be obtained from the Air University Interlibrary Loan Service (AUL/LDEX, Maxwell AFB, Alabama, 36112) or the Defense Technical Information Center. Request must include the author's name and complete title of the study.

This document may be reproduced for use in other research reports or educational pursuits contingent upon the following stipulations;

-- Reproduction rights do not extend to any copyrighted material that may be contained in the research report.

-- All reproduced copies must contain the following credit line: "Reprinted by permission of the Air Command and Staff College."

-- All reproduced copies must contain the name(s) of the report's author(s).

-- If format modification is necessary to better serve the user's needs, adjustments may be made to this report--this authorization does not extend to copyrighted information or material. The following statement must accompany the modified document: "Adapted from Air Command and Staff Research Report (number) entitled (title) by (author) ."

-- This notice must be included with any reproduced or adapted portions of this document.



**REPORT NUMBER** 87-2175

**TITLE** A COMPARISON OF THE EFFECTIVENESS  
OF THE AIR COMMAND AND STAFF COLLEGE  
SEMINAR AND CORRESPONDENCE PROGRAMS

**AUTHOR(S)** MAJOR KENNETH W. ROY

**FACULTY ADVISOR** MAJOR RICHARD A. RANKER, ACSC/EDV

**SPONSOR** MAJOR RICHARD A. RANKER, ACSC/EDV

Submitted to the faculty in partial fulfillment of  
requirements for graduation.

AIR COMMAND AND STAFF COLLEGE  
AIR UNIVERSITY  
MAXWELL AFB, AL 36112

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

## REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION <b>UNCLASSIFIED</b>			1b. RESTRICTIVE MARKINGS	
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION/AVAILABILITY OF REPORT  <b>STATEMENT "A"</b> Approved for public release; Distribution is unlimited.	
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE				
4. PERFORMING ORGANIZATION REPORT NUMBER(S) <b>87-2175</b>			5. MONITORING ORGANIZATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION <b>ACSC/EDCC</b>		6b. OFFICE SYMBOL (If applicable)	7a. NAME OF MONITORING ORGANIZATION	
6c. ADDRESS (City, State and ZIP Code)  <b>Maxwell AFB, AL 36112-5542</b>			7b. ADDRESS (City, State and ZIP Code)	
8a. NAME OF FUNDING/SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c. ADDRESS (City, State and ZIP Code)			10. SOURCE OF FUNDING NOS.	
			PROGRAM ELEMENT NO.	PROJECT NO.
			TASK NO.	WORK UNIT NO.
11. TITLE (Include Security Classification) <b>A COMPARISON OF THE EFFECTIVENESS</b>				
12. PERSONAL AUTHOR(S) <b>ROY, KENNETH W., MAJOR, USAF</b>				
13a. TYPE OF REPORT		13b. TIME COVERED FROM _____ TO _____	14. DATE OF REPORT (Yr., Mo., Day) <b>1987 APRIL</b>	
15. PAGE COUNT <b>44</b>				
16. SUPPLEMENTARY NOTATION <b>ITEM 11: OF THE AIR COMMAND AND STAFF COLLEGE SEMINAR AND CORRESPONDENCE PROGRAMS (U)</b>				
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB. GR.		
19. ABSTRACT (Continue on reverse if necessary and identify by block number) <p>Presents an analysis of the ACSC associate programs (seminar and correspondence options). Prepared under the guidance of the ACSC Evaluation Directorate (EDV) to analyze the trends of perceptions of recent students, and trends of failure rates, completion rates, and average test scores. Additionally, the contribution of additional activities to the learning process in the seminar program is reviewed. Conclusions and recommendations are based on data obtained from previous surveys, as well as historical data on file in the ECI data base. The views and opinions are solely those of the author and do not represent those of the United States Air Force.</p>				
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT  UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input checked="" type="checkbox"/> DTIC USERS <input type="checkbox"/>			21. ABSTRACT SECURITY CLASSIFICATION  <b>UNCLASSIFIED</b>	
22a. NAME OF RESPONSIBLE INDIVIDUAL  <b>ACSC/EDCC Maxwell AFB AL 36112-5542</b>			22b. TELEPHONE NUMBER (Include Area Code) <b>(205) 293-2483</b>	22c. OFFICE SYMBOL

June 1904

— 50 —

A-1



---

## ABOUT THE AUTHOR

---

Major Kenneth W. Roy is from Gloucester, Virginia, and is a 1974 graduate of Washington and Lee University. In 1975 he was a distinguished military graduate of Officer's Training School. In 1984 he received a Master of Arts degree in Business Administration from the University of Nebraska at Lincoln.

After completing navigator and bombardier training at Mather AFB, California in August 1976 he was assigned to B-52s at Grand Forks AFB, North Dakota. While there, he upgraded from navigator to radar navigator.

In April 1980 he was assigned to Headquarters, Strategic Air Command, for a tour of duty as the Chief of the Aircrew and Technical Training Branch. While serving on that tour he later became the Chief of the Training Division. Following this, in April 1983, he was assigned as the Chief of Personnel and Manpower for the Joint Strategic Target Planning Staff.

Major Roy's military education includes Squadron Officers School by correspondence and in residence, as well as completion of Air Command and Staff College by correspondence. His military decorations include the Defense Meritorious Service Medal, the Meritorious Service Medal, and the Air Force Commendation Medal.

He is a lifetime member of the Air Force Association, and is a member of Mensa. Major Roy is married to the former Francoise Riddle of Montgomery, Alabama. He has one daughter, Lindsay.



---

---

## TABLE OF CONTENTS

---

---

Preface.....	iii
About the Author.....	iv
Table of Contents.....	v
List of Illustrations.....	vii
Executive Summary.....	viii
 CHAPTER ONE--THE PROBLEM.....	 1
BACKGROUND.....	1
COMPARISON OF TWO OPTIONS AND STATEMENT OF THE PROBLEM.....	2
PURPOSE OF THIS STUDY.....	2
OBJECTIVES OF STUDY.....	3
ASSUMPTIONS.....	3
LIMITATIONS.....	4
HYPOTHESES OF THIS STUDY.....	5
CONTENTS OF THIS STUDY.....	5
 CHAPTER TWO--REVIEW OF RELATED LITERATURE.....	 7
1982 STUDIES OF SEMINAR AND CORRESPONDENCE PROGRAMS.....	7
1983 STUDIES OF SEMINAR AND CORRESPONDENCE PROGRAMS.....	9
1984 STUDIES OF SEMINAR AND CORRESPONDENCE PROGRAMS.....	11
1985 STUDIES OF SEMINAR AND CORRESPONDENCE PROGRAMS.....	12
TRENDS.....	14
APPROPRIATE STATISTICAL MEASURES.....	14
 CHAPTER THREE-METHODOLOGY AND INTRODUCTION OF DATA.....	 17
PRESENTATION OF SURVEY DATA.....	17
PRESENTATION OF FAILURE AND COMPLETION RATES.....	20
PRESENTATION OF AVERAGE TEST SCORES.....	21
IMPACT OF ADDITIONAL ACTIVITIES IN THE SEMINAR PROGRAM.....	23
 CHAPTER FOUR--FINDINGS AND ANALYSIS.....	 25
ANALYSIS OF SURVEY DATA.....	25

---

---

## CONTINUED

---

---

ANALYSIS OF FAILURE AND COMPLETION RATES.....	26
ANALYSIS OF AVERAGE TEST SCORES.....	27
ANALYSIS OF ADDITIONAL ACTIVITIES IN THE SEMINAR PROGRAM.....	27
SUMMARY.....	28
CHAPTER FIVE--SUMMARY.....	29
CONCLUSIONS.....	29
RECOMMENDATIONS.....	30
BIBLIOGRAPHY.....	32

---

## LIST OF ILLUSTRATIONS

---

### TABLES

TABLE 1--Mean Survey Responses of Curriculum Sub-areas for Years 1981-1984.....	19
TABLE 2--Students Enrolling in Associate Programs for Years 1981-1984.....	20
TABLE 3--Students Failing a Phase in Associate Programs for Years 1981-1984.....	21
TABLE 4--Students Completing a Phase in Associate Programs for Years 1981-1984.....	21
TABLE 5--Average Test Score Data for Years 1982-1985.....	22
TABLE 6--Samples of Behavior Supported by Additional Activities in 1987 Seminar Program.....	23
TABLE 7--Analysis of Test Questions (Form 3/1987AY).....	23
TABLE 8--Analysis of Test Questions (Form 4/1987AY).....	24
TABLE 9--Test Results from First 201 Students to Take the 36A Exams (Forms 03 and 04/1987AY).....	24



## EXECUTIVE SUMMARY

Part of our College mission is distribution of the students' problem solving products to DoD sponsors and other interested agencies to enhance insight into contemporary, defense related issues. While the College has accepted this product as meeting academic requirements for graduation, the views and opinions expressed or implied are solely those of the author and should not be construed as carrying official sanction.

—“insights into tomorrow”

REPORT NUMBER

87-2175

AUTHOR(S)

MAJOR KENNETH W. ROY

TITLE

A COMPARISON OF THE EFFECTIVENESS OF THE AIR COMMAND  
AND STAFF COLLEGE SEMINAR AND CORRESPONDENCE PROGRAMS

I. PURPOSE: This study will first review analyses of the 1981-1984 associate programs, and will provide a critical evaluation of data obtained in previous attitude surveys regarding the effectiveness of the two associate programs. Previous studies will be reviewed for effectiveness in applying sound statistical principles to their findings, and changes to interpretation of data resulting from these surveys will be highlighted. Also, failure and completion rates for the periods surveyed will be reviewed and compared. Additionally, the test results will be analyzed to determine whether there is any significant difference between the seminar and correspondence programs. Finally, for the seminar option only, the additional activities will be reviewed to determine the percentage of those that support lesson samples of behavior.

II. PROBLEM: Because the mission and goals of all three methods of completing ACSC are the same, they should be equally effective. For those students that attend in residence, there are many opportunities for the faculty to observe the student to critically analyze that student's performance. However, for the 85% of officers enrolled in the associate programs, the task of evaluating effectiveness of

---

## CONTINUED

---

each of the two methods is much harder. Because of this, the question arises as to whether there is any difference in the effectiveness of the seminar program in accomplishing the mission and goals of ACSC when compared to the correspondence program. The primary hypothesis of this study is there is no significant difference in the effectiveness of the correspondence and seminar programs in accomplishing the mission and goals of ACSC. Further, the secondary hypothesis is there is no significant difference in failure rates, completion rates, or test scores for these two options.

III. DATA: The survey responses and objective data indicated both the seminar and correspondence options were equally effective in accomplishing the mission and goals of ACSC. Although there was some small variance between the survey responses, that variance was not statistically significant. Analysis indicated no statistical difference in the failure rates of the two options at the 95% confidence level. On the contrary, analysis indicated there was a statistically significant higher completion rate for the seminar option than the correspondence option. Analysis, however, did indicate no statistical significance between test scores for the two options. Analysis indicated the additional activities contribute to the learning process in the seminar option. Indications from a very limited sample support the contention that these additional activities support correctly answering the test questions.

IV. CONCLUSIONS: Not only did the responses from the previous surveys support the primary hypothesis, so did an extensive analysis of the mean failure rates and average test scores. Analysis yielded no statistical difference between the two options. The only factor that was significantly different was the completion rates. Therefore, although the secondary hypothesis is rejected, the primary hypothesis of this study is accepted.

---

## CONTINUED

---

### V. RECOMMENDATIONS:

First, there should be no major change to either program.

Second, efforts should be taken by ECI and ACSC to raise the completion rate for the correspondence program.

Third, efforts should be taken by ACSC to ensure seminar students profit from the larger educational experience inherent in that program.

Fourth, in the seminar program the discussion questions, briefings, and videotapes should all be focused on the samples of behavior (SOBs) designed in the lessons.

Fifth, the ACSC associate programs staff should continue having resident students conduct surveys to determine opinions on the effectiveness of the programs.

Sixth, future researchers should incorporate analysis of failure rates and average test scores in conjunction with their surveys.

Seventh, future surveys should use a one-tail test for the analysis of curriculum subareas.

Eighth, there needs to be consistency in the design of the student populations to be surveyed.

Finally, course managers for the seminar program should review their test construction procedures to ensure all forms of a test are as equally constructed as possible.

## Chapter One

### THE PROBLEM

#### BACKGROUND

Today, there are three ways for an Air Force officer to complete Air Command and Staff College (ACSC). The first way, the most limited, is in residence. Under this method, officers are assigned to the Air University at Maxwell AFB, Montgomery, Alabama, for nine months of concentrated study. Only approximately 15% of all eligible officers are given the opportunity to complete ACSC in this manner. The remainder are given the opportunity to complete their professional military education through the associate programs. In this category there are two options available: seminar and correspondence.

In each of these three methods, the mission is the same. This mission is "to enhance the professional knowledge, skills, and perspectives of mid-career officers for increased leadership roles in command and staff positions" (9:2). Additionally, the senior staff of ACSC has established the following vital goals to ensure this primary mission is accomplished:

1. To provide an environment for personal and professional growth.
2. To provide a forum for significant professional contribution.
3. To enhance knowledge and understanding of the Air Force's mission and capabilities.
4. To enhance professional skills required to command, lead, and manage aerospace forces.
5. To enhance understanding of the dimension and goals of the military in a democratic society within the global setting.
6. To prepare for the critical task of imparting acquired knowledge, skills, and perspectives to others (9:2).

## COMPARISON OF TWO OPTIONS AND STATEMENT OF THE PROBLEM

Because the mission and goals of all three methods of completing ACSC are the same, they should be equally effective. For those students that attend in residence, there are many opportunities for the faculty to observe the student to critically analyze that student's performance. However, for the 85% of officers enrolled in the associate programs, the task of evaluating effectiveness of each of the two methods is much harder. Much of the evaluation is based on the results of multiple-choice tests that only evaluate the student's ability to remember facts. For the correspondence program, this is probably the most appropriate method of evaluation. However, in the seminar program, students participate in and are exposed to many different additional activities not available to correspondence students. These include listening to guest speakers, sharing knowledge with other seminar members, and having increased opportunities to improve leadership skills through the dynamics of group participation. Despite these increased opportunities, final evaluation is currently determined by tests based on the reading material, which is the same as for correspondence students. Because of this, the question arises as to whether there is any difference in the effectiveness of the seminar program in accomplishing the mission and goals of ACSC when compared to the correspondence program. This is the problem facing the author in this analysis.

## PURPOSE OF THIS STUDY

This study will first review analyses of the 1981-1984 associate programs, and will provide a critical evaluation of data obtained in previous attitude surveys regarding the effectiveness of the two associate programs. Previous studies will be reviewed for effectiveness in applying sound statistical principles to their findings, and changes to interpretation to data resulting from these surveys will be highlighted. Also, failure and completion rates for the periods surveyed will be reviewed and compared. Additionally, the test results will be analyzed to determine whether there is any significant difference between the seminar and correspondence programs. Finally, for the seminar option only, the additional activities will be reviewed to determine the percentage of those that support lesson samples of behavior.



## OBJECTIVES OF STUDY

1. Analyze results of graduate surveys that were administered to seminar and correspondence students. Determine trends in student attitudes of comparative effectiveness of the two options.
2. Determine if there is a significantly higher failure rate for the seminar option when compared to the correspondence option;
3. Determine if there is a significant difference in the completion rate for the seminar option when compared to the correspondence option; and
4. Compare the average exam scores for students enrolled in the seminar and correspondence options and determine whether they are significantly different.
5. Determine whether the expert briefings, videotapes, class discussion questions, and student briefings in the seminar option contribute to the learning process. Determine whether these additional activities support answering test questions.

## ASSUMPTIONS

The first assumption is this study will yield valuable information for the ACSC staff responsible for the associate programs. Also, the findings will be reviewed by the ACSC staff to further refine the two associate programs to ensure they are meeting the mission and goals of the school.

The second assumption is that the studies accomplished by previous researchers were accomplished using statistically sound methods. Since the basis for much of this analysis is the written reports, as the actual survey materials are unavailable, this author is assuming the facts, and not necessarily the findings and opinions, of the previous reports are correctly presented.

The third assumption is that data gathered in the previous studies still represent the overall status and effectiveness of the associate programs today.

The fourth assumption is that the sample populations that responded for the previous surveys accurately represented attitudes of the entire population.

The fifth assumption is that the records maintained by ACSC and ECI accurately reflect the students enrolling in, failing, and completing the various course phases.

The sixth assumption is that the test questions contained in all of the exams were appropriate in so far as testing to the desired level of knowledge/performance.

### LIMITATIONS

The first limitation is that the majority of this analysis is based on surveys administered by personnel other than the author. Therefore, findings are based on questions written and developed which may induce some bias. However, since the survey questions were reviewed by staff members of ACSC prior to administration of the surveys, this limitation is somewhat reduced.

The second limitation is that surveys were accomplished from 1982 through 1985, and may not reflect exact perceptions of today's students. However, this is necessary in order to build a trend analysis of the overall effectiveness of the associate programs.

The third limitation is that the findings of previous analyses were based only on responses received during the survey process. There is no way to ascertain the attitudes of students that were not selected as part of the test population or failed to respond to the questionnaire.

The fourth limitation was that there were some major inconsistencies in the administration and analysis of the varied reports in the past. These will be identified and a recommended procedure to correct these inconsistencies and present a unified analysis for this and future investigations of this topic will be included in the following chapters.

The fifth limitation is that the success of each of these two options is judged only in light of test scores on end-of-course exams. There is no consideration given to the experiences gained by seminar students in the leading of specific seminars, presenting briefings, hearing expert/guest speakers, and participating in the larger seminar experience.

## HYPOTHESES OF THIS STUDY

The major hypothesis of this study is there is no significant difference in the effectiveness of the correspondence and seminar programs in accomplishing the mission and goals of ACSC. Further, the minor hypothesis is there is no significant difference in failure rates, completion rates, or test scores for these two options.

## CONTENTS OF THIS STUDY

Chapter I outlines the basic thesis of the study as well as presents the background, questions to be studied, and assumptions and limitations.

Chapter II is a review of previous analyses. Also included is a brief discussion of basic statistical measures appropriate for this study.

Chapter III details the methodology used in analyzing the data pertaining to this study. This includes not only data contained in previous studies, but also introduces additional measures such as failure rates, completion rates, and average test scores into this analysis. Also included is an analysis of additional activities distinct to the seminar program.

Chapter IV is a discussion of trends discovered during this study. This will relate to findings from previous studies as well as findings ascertained from analysis of available data.

Chapter V contains conclusions and recommendations for ACSC Associate Program managers.

## Chapter Two

### REVIEW OF RELATED LITERATURE

Several studies on this topic have been conducted in recent years. However, only those studies accomplished since 1982 will be included in this report. These studies are briefly recapped in this chapter.

#### 1982 STUDIES OF SEMINAR AND CORRESPONDENCE PROGRAMS

##### Seminar Program

In 1982 Majors David W. Alexander and Crandler Crowson, Jr, conducted a survey of both the seminar and correspondence programs. In this survey, they based their analyses on the return of 552 questionnaires from the seminar students, and 692 returned questionnaires from correspondence students. For the seminar program, the target population was only those students that had completed the seminar program in AY81. In the correspondence program, questionnaires were administered to those students that were enrolled in either Phase B, C, or D (1:8).

This study made the following recommendations for the seminar program:

1. Decrease the Staff Communications phase of the program, and reduce the elementary aspects such as emphasis on grammar and composition.
2. Review the Quantitative Methods instruction segment for applicability to the school mission.
3. Update the videotapes used in the course, and delete the "Air Power Heritage" videos.

4. Reduce emphasis on management-related topics, with a corresponding increase on command and leadership topics.

5. Provide additional training to faculty instructors (FIs) so they may be better prepared for their responsibilities to the seminars. Review the perceptions seminars have for their associated FIs.

6. Decrease course length to six months, primarily by conducting two seminars a week.

7. Reduce the reading materials by editing those that are judged to be excessively long and tedious.

8. Finally, develop a method to keep the readings as current and applicable as possible (1:33-34).

#### Correspondence Program

For the correspondence program, the ratings were somewhat lower than for the seminar program. There appeared to be less satisfaction with each phase of instruction. Specifically, the correspondence course students judged the reading material to be lower in quality than seminar students.

This study made the following recommendations for the correspondence program:

1. Decrease the Staff Communications phase of the program, and reduce the elementary aspects such as emphasis on grammar and composition. Eliminate the requirement for the students to deliver a military briefing.

2. Review the Quantitative Methods instruction segment for applicability to the school mission.

3. Reduce the reading materials by editing those that are judged to be excessively long and tedious.

4. Increase the coverage of studies on the USSR and the PRC, International Law, Tactical Air Forces, and Strategic Air Forces.

5. Review exams to change the emphasis from "laundry list" type questions to concept-testing questions.

6. Develop a method for the students to trigger the forwarding of their end-of-course test, without having to submit the end-of-phase critique.

7. Finally, develop a method to keep the readings as current and applicable as possible (1:36).

### Summary

Generally, the findings for each method were positive, with no major differences determined between the two. The surveys judged the overall quality of the programs to be good, with over 55% of the respondents giving an assessment rating of "excellent" or "outstanding". The most positive feature of the seminar program was the opportunity for the students to interact with officers with other career backgrounds and experiences (1:22).

## 1983 STUDIES OF SEMINAR AND CORRESPONDENCE PROGRAMS

### Seminar Program

In 1983, and later years, separate studies were made of the correspondence and seminar programs. The study of the seminar program, by Major Michael P. McCall, stated that the seminar program failed to meet its main objectives. The findings indicated to McCall that only the Staff Communications and Command, Leadership, and Resource Management phases of the curriculum were effective in supporting the school objectives. He further stated the hypotheses that the National Security Affairs, Warfare Studies, and overall Seminar Performance were effective in supporting the mission were rejected. The reason for these findings were based on improper selection of statistical measures of interpretation that will be corrected in chapter five of this study.

The primary recommendations McCall made in his study were:

1. Improve and standardize faculty critiques of writing assignments.
2. Strengthen the briefing program to ensure more success of the seminars.
3. Rewrite the statistics portion of the curriculum, or delete it.
4. Replace "boring" videotapes.

5. Edit reading materials to ensure they only contain materials that directly support the learning objectives. Also, include audiotapes on a permanent basis to the seminars to complement the readings.

6. Test the students four times instead of two, and design the exams to test for comprehension and knowledge rather than the ability to remember details.

7. Strengthen the unannounced visitation program (7:25).

### Correspondence Program

The study on the correspondence program, conducted by Major Robert L. Joyal, found the program to be meeting the school objectives. Joyal surveyed only those officers that had completed all four phases of the program in FY82. In his analysis, he determined that only the Staff Communications phase was not adequately supporting the school objectives, but overall, the correspondence course was accomplishing its mission. He then made the following recommendations:

1. Review the Staff Communications curriculum and consider eliminating the requirement for a student briefing.

2. Review and update the Quantitative Methods lesson.

3. The Leadership and Management portion of instruction should be expanded.

4. Revise exams to focus on concept application rather than memorization of "laundry lists." Also, raise the passing grade from 65% to 70%.

5. Raise the postal priority of course materials for overseas students.

6. Review the quality of the reading material to ensure they support the objectives of the school (6:20-21).

### Summary

According to the 1983 student surveys, both the seminar and correspondence programs were fairly equally accomplishing the mission of ACSC. The recommendations for the seminar program were directed more to program administration than the course content. However, surveys for both the seminar and

correspondence programs had valid recommendations that dealt with problems encountered by students.

## 1984 STUDIES OF SEMINAR AND CORRESPONDENCE PROGRAMS

### Seminar Program

In Major John T. Huguley, Jr.'s, 1984 study of the ACSC seminar program, he found this option was effective, with over 59% of survey responses judging the program to be either "outstanding" or "excellent". In this study, the Staff Communications block was judged to be the least effective block of instruction. The Command, Leadership, and Resource Management block received more favorable responses, and the National Security Affairs and Warfare Studies blocks received the highest ratings. The primary recommendations made in this study were:

1. Once again, improve writing critiques of student papers.
2. Review guidance on procedures for conducting effective briefings.
3. Simplify instruction on the systems acquisition process.
4. Reduce quantity of course materials.
5. Eliminate unannounced visit program [note: this is opposite to the recommendation of the 1983 study].
6. Update videotapes.
7. Insure administration computer products are timely, accurate, and complete.
8. Improve quality control of exams (4:29-30).

### Correspondence Program

The study of the correspondence program by Major David R. Casteel found this option to be extremely positive. Major Casteel determined the program was effective in meeting the mission, goals, and objectives of ACSC. In this study the



National Security Affairs block was the most positively rated area, with Warfare Studies close behind. Once again, the Staff Communications block was rated the lowest. In general, over 56% of the respondents believed the course had helped in increasing their officership qualities. In this study the primary recommendations were:

1. Ensure course material is sent to students in a timely manner.
2. Allow local base education officers to grade exams on-the-spot.
3. Increase emphasis on effectively writing an OER.
4. Mail diplomas directly to the student's commander.
5. Continue to stress the attributes of professionalism.
6. Monitor attitudes of supervisors to ensure support of the correspondence program.
7. Eliminate "trusted critic" evaluation of student briefings.
8. Consider raising the passing grade for the exams to 75% or 80% (2:30-31).

### Summary

In summary, in 1984 both programs were judged to be excellently meeting the mission of ACSC. The majority of survey respondents felt the programs were either "outstanding" or "excellent". In reviewing the recommendations, it appears they were still rather oriented to administration of the courses rather than focusing on course content.

## 1985 STUDIES OF SEMINAR AND CORRESPONDENCE PROGRAMS

### Seminar Program

Major David F. Hulme surveyed students enrolled in the 1984 seminar program and determined the program met the mission of ACSC. In this analysis the most favorably received aspects were the faculty instructor participation and the inclusion of

videotapes in the curriculum. The weakest areas were the instructional lessons on briefings and time/stress management, the visitation program, and the formal testing program. This study made the following recommendations:

1. The lessons on Staff Briefing Skills and Stress/Time management be revalidated.
2. ACSC/EDV totally review the formal examination program.
3. The visitation program be changed to provide for one unannounced and two announced visits per year (5:41).

#### Correspondence Program

The study of the correspondence program, conducted by Major John L. Grumbles, determined the program to be rated even higher in 1984 than in 1983. Once again, the National Security Affairs and Warfare Studies blocks received the highest ratings. All the other areas also received positive ratings, thus showing that the course program managers were implementing recommendations from previous surveys. The following recommendations were made in this study:

1. Allow on-the-spot grading by the local base education office.
2. Provide more course curriculum on command, leadership, and officership.
3. Continue good quality control of reading material.
4. Analyze phase point at which the course is most valuable to the students.
5. Standardize parts of surveys administered to resident, correspondence, and seminar students to permit comparison of results and trend analysis (3:35-36).

#### Summary

Thus, in summary, once again both programs were rated very highly. The trend, from the students' points of view at least, is that the seminar and correspondence programs were improving. This showed a responsiveness of the program managers to listen to input from students and make the necessary changes to more

effectively accomplish the ACSC mission.

## TRENDS

From this review it can be seen that generally the students had a favorable opinion of the seminar and correspondence programs. There were several recommendations that were adopted by program managers over the years, and the results of these showed up in the subsequent surveys. There were also many administrative-oriented recommendations that did not stand the test of practicality, such as conducting two seminars a week, which were not adopted. Although both seminar and correspondence options were determined to be meeting the mission objectives, now additional data will be reviewed to determine whether one method is more effective than the other.

## APPROPRIATE STATISTICAL MEASURES

In previous analyses, the researchers employed a two-tail test to determine whether the associate programs were meeting the objectives of ACSC. In this, the hypothesis was accepted if the responses fell at or above the 95% confidence level of the normal distribution. However, in one case at least, this led to the erroneous rejection of a survey hypothesis. Therefore, a recommended approach will be presented in chapter five. In the analysis of failure rates, completion rates, and comparison of test scores for the two options, a two-tail test will be employed. Below are several statistical measures, with explanations developed by the author to present them in layman's terms, that will be used in the analysis of the available data.

**SURVEY SAMPLE SIZE** - Throughout the previous surveys, one of the primary considerations was that the number of course officers responding to the questionnaires would be statistically significant. This would be true if a confidence level of 95% was achieved, with a plus or minus 5% precision level. In each of the surveys reviewed, this number of required responses was exceeded, therefore giving credence to the survey results.

**MEAN** - This is also known as the mean index value by some researchers. This is basically the arithmetic average of a set of numbers (4:7; 6:8; 7:6).

STANDARD DEVIATION - This is the square root of the average squared deviations from the mean. It signifies how closely the mean represents the various occurrences in a distribution (4:7; 6:8; 7:6).

NORMAL DISTRIBUTION - It is assumed that responses from survey questions, and data regarding failure rates, completion rates, and test scores are normally distributed about their respective averages.

## Chapter Three

### METHODOLOGY AND INTRODUCTION OF DATA

The previous chapter presented some of the subjective assessments made by various researchers. Now the quantitative data developed from these previous surveys will be considered. Additionally, data regarding the failure rates for the two associate options, their corresponding completion rates, and the average test scores received by students during this period will be introduced. Also, the additional activities in the seminar program will be reviewed, as well as the potential influence they have on addressing the samples of behavior and correctly answering exam questions. The findings from the review of these data will be presented in chapter four of this paper.

### PRESENTATION OF SURVEY DATA

Throughout this period of research, there were major consistencies, as well as some inconsistencies, in the way the student surveys were conducted and interpreted. One constant attribute was the fact that each of the survey results was based on a statistically-determined sample population that was valid at the 95% confidence level.

In both the seminar and correspondence options, the courses were divided into various sub-areas. These were Staff Communications; Command, Leadership, and Resource Management; National Security Affairs; and Warfare Studies. Each of these sub-areas was individually reviewed by the previous researchers.

In the earlier years the researchers used such statistical measures as the mean index value (MIV) (which is basically the mean), the standard error of the mean (which is the standard deviation divided by the square root of the sample size), and confidence intervals (which adds a degree of confidence that the sample MIVs are sound estimates of the population MIVs.)

These studies evaluated the responses from the seminar and correspondence course student surveys, and postulated whether each curriculum sub-area was effectively meeting the mission of ACSC.

Later studies focused on the statistical measures of the mean (the arithmetic average of responses) and the mode (the most frequent response to a question) as the primary response measurements. The findings were then simply analyzed to determine whether the tendencies of student opinions for each subarea of curriculum were strongly positive, positive, neutral, negative, or strongly negative.

Throughout the survey years there was little consistency in determining the appropriate student populations to be the subjects of analysis. Populations were based on students completing various phases in either the previous calendar, or fiscal, year, completing during the period 1 Jan - 31 Oct, or enrolled in one of the phases of the courses. Therefore, while these populations are close in composition and differences are probably not statistically significant, this factor is worth noting. In chapter five of this paper a recommended standard for this factor in future surveys will be presented.

However, to determine trends in the results of previous studies, there must be some consistency. Therefore, individual survey results must be presented so they may be compared to one another. To do this, all survey responses have been recomputed for analysis here. The means of the responses to the opinions of students of curriculum subareas are thus presented below. The data were recomputed so that the responses were based on a 5-point Likert scale, with "A" meaning "strongly positive" for 5 points, "B" meaning "positive" for 4 points, "C" meaning "neutral" for 3 points, "D" meaning "negative" for 2 points, and "E" meaning "strongly negative" for 1 point. Only the data are presented in Table 1, with trends and findings to follow in chapter four.

	Correspondence	Seminar
1981		
Mission	3.800	3.915
Staff Comm	3.305	3.614
Cmd, Ldrshp, & Res Mgmt	3.529	3.680
Nat Sec Aff	3.523	3.820
Warfare Stud	3.506	3.788
1982		
Mission	3.702	3.381
Staff Comm	3.264	3.552
Cmd, Ldrshp, & Res Mgmt	3.519	3.548
Nat Sec Aff	3.678	3.807
Warfare Stud	3.610	3.742
1983		
Mission	3.480	3.964
Staff Comm	2.990	3.573
Cmd, Ldrshp, & Res Mgmt	3.550	3.630
Nat Sec Aff	3.770	3.630
Warfare Stud	3.780	3.856
1984		
Mission	3.340	4.001
Staff Comm	3.100	3.684
Cmd, Ldrshp, & Res Mgmt	3.600	3.733
Nat Sec Aff	3.860	4.063
Warfare Stud	3.770	3.996

Table 1. Mean Survey Responses of Curriculum Sub-areas for Years 1981-1984

As can be seen above, there was very little variance between the two options. Nearly all of the sub-areas were given positive ratings, showing there was basically acceptance by the student populations in the format and content of each sub-area.

## PRESENTATION OF FAILURE AND COMPLETION RATES

In addition to survey results, there is other information which can help determine whether the seminar and correspondence programs are meeting mission goals. As discussed above, for both options the curriculum is divided into four sub-areas. Until 1983, the seminar program had only two tests for the material. In 1983, the seminar option offered a four-phase course, which is the same as had been offered in the correspondence option throughout this entire period. Therefore, in subsequent discussion, each enrollment in a phase is considered as enrollment in a separate course. Below are shown the failure rates and completion rates for the two options. In Tables 2-4 below, any enrollment in any phase is counted. Likewise, every failure is also counted. For example, if a student disenrolled from the initial phase in the correspondence option, then reenrolled, subsequently failed each of the four end of course exams on the first attempt, and then passed the exams on the second attempt, the tables below would reflect two enrollments, four failures, and four completions.

	CORRESPONDENCE	SEMINAR
1981	8730	3611
1982	12823	6579
1983	18907	15938
1984	17422	13147

Table 2. Students Enrolling In Associate Programs for Years  
1981-1984 (9:--)



	CORRESPONDENCE NUMBER/PER CENT	SEMINAR NUMBER/PER CENT
1981	109 (1.2%)	20 (.6%)
1982	227 (1.8%)	14 (.2%)
1983	583 (3.1%)	198 (1.2%)
1984	1870 (10.7%)	2114 (16.1%)
Mean Failure Rate	4.2%	4.5%
Standard Deviation	3.8	6.7

Table 3. Students Failing a Phase in the Associate Programs for Years 1981-1984 (9:--)

	CORRESPONDENCE NUMBER/PER CENT	SEMINAR NUMBER/PER CENT
1981	4190 (48%)	3114 (86%)
1982	8874 (69%)	6565 (98%)
1983	10353 (55%)	12448 (78%)
1984	11575 (66%)	12039 (92%)
Mean Completion Rate	59.5%	88.5%
Standard Deviation	8.4	7.4

Table 4. Students Completing a Phase in the Associate Programs for Years 1981-1984 (9:--)

The tables above show the relative size of the student populations in each of the two options, as well as the relative failure rates and completion rates during the period of study. As can be seen, the correspondence program was the larger program throughout the period. Also, while there was not much variance in the average failure rates, there was a much larger difference in the completion rates for this period.

#### PRESENTATION OF AVERAGE TEST SCORES

In reviewing the average test scores for the two options, several small problems arose. First, there were no data available for the 1981 correspondence course. Therefore, Table

5 incorporates 1985 data in order to be consistent with the four-year trends established in other analyses in this paper. Also, during this period the seminar program was undergoing a transformation from a two-phase program to a four-phase program.

CORRESPONDENCE (FOUR-PHASE) AVG TEST SCORE/STANDARD DEVIATION BY COURSE (PHASE)				
	30A	30B	30C	30D
1982	79.462/8.8	83.181/9	84.293/8.0	84.591/8.5
1983	78.428/7.8	81.291/8.9	78.415/9.5	82.477/8.6
1984	77.808/7.1	79.419/8.2	75.040/8.7	79.750/8.1
1985	78.274/7.7	80.112/8.7	80.129/9.1	80.097/7.9

SEMINAR (TWO-PHASE) AVG TEST SCORE/STANDARD DEVIATION BY COURSE (PHASE)		
	31A	31B
1982	78.031/8.0	82.562/7.9
1983	69.667/7.2	77.012/10.8
1984	N/A*	76.045/9.7
1985	76.000/0**	70.000/0**

\* No students tested in 1984  
\*\* Only one student tested in 1985

SEMINAR (FOUR-PHASE) AVG TEST SCORE/STANDARD DEVIATION BY COURSE (PHASE)				
	31C	31D	31E	31F
1982	N/A	N/A	N/A	N/A
1983	77.712/7.7	77.901/9.0	73.931/7.6	76.417/7.7
1984	77.542/7.6	78.050/9.1	74.193/7.6	76.558/7.3
1985	75.148/8.5	73.754/10.0	80.504/7.8	78.135/7.9

Table 5. Average Test Score Data for Years 1982-1985 (10:--)

In the table above the average test score data are shown for the correspondence, and both the seminar two-phase and four-phase, programs. As can be seen, there was generally little variance between the programs. Also, there was a rather large standard deviation in each of the years and phases, thus

signifying a relatively flat normal distribution.

### IMPACT OF ADDITIONAL ACTIVITIES IN THE SEMINAR PROGRAM

The final factor to be considered in this analysis is the impact of the additional activities in the current seminar program. The value the discussion questions, videotapes, and student/expert briefings have in aiding in addressing the samples of behavior, and subsequently in answering the end of course exams, will now be considered.

In determining these data, the author first sampled the lesson leader guides for all of the odd-numbered lessons in the 1987 seminar program to determine the number of discussion questions, videos, and briefings that were designed to address specific samples of behavior (SOBs). In Table 6 below are shown the percentages of SOBs that are supported by either one or more of the additional activities mentioned above, as well as the actual test questions that are likewise supported. As an additional factor, in Tables 7 and 8 the test question data are broken down into forms 3 and 4 of the current tests, and the latest results of the 201 student samples are included in Table 9 for reference.

Number of SOBs	Number and % Supported by Discussion Questions	Number and % Supported by Videos or Briefings	Number and % Supported by Discussion and Videos and/or Briefings
177	122 (69%)	87 (49%)	82 (46%)

Table 6. Samples of Behavior Supported by Additional Activities in 1987 Seminar Program (11:--)

Percentage of Questions with no Activities	Percentage Supported by Discussion Questions Only	Percentage Supported by Videos or Briefings Only	Percentage Supported by Discussion and Videos and/or Briefings
12%	36%	18%	34%

Table 7. Analysis of Test Questions (Form 3/1987AY) (11:--)

Percentage of Questions with no Activities	Percentage supported by Discussion Questions Only	Percentage supported by Videos or Briefings Only	Percentage supported by Discussion and Videos and/or Briefings
21%	37%	18%	24%

Table 8. Analysis of Test Questions (Form 4/1987AY) (11:--)

	Form 03	Form 04
Mean	77.03	75.18
Std Dev	7.85	9.72
Number Fails	12	15
1st Time Fails	6.0%	7.5%

Table 9. Test Results from First 201 Students to Take the 36A Exams (Forms 03 and 04/1987AY) (8:--)

These tables show the extent of the impact of additional activities in the seminar program on a very small sample population. As stated earlier, this analysis is based on a sampling from a single year, and includes data from just the initial 201 students to take the current tests.

Now that the raw data have been presented, there must be an analysis of what they exactly mean. The data for the survey responses, failure rates, completion rates, average test scores, and impact of additional activities in the seminar program thus present a basis from which several conclusions may be drawn. This will be the topic of the subsequent chapter.

## Chapter Four

### FINDINGS AND ANALYSIS

#### ANALYSIS OF SURVEY DATA

In reviewing the survey data results presented in Table 1 in the previous chapter, one can discern several significant items. Basically, the seminar students consistently rated that program somewhat higher than did the correspondence students. This is true for all 20 curriculum sub-areas except for 3, those being Mission Effectiveness in 1982, and Staff Communications and National Security Affairs in 1983.

In this period, only one sub-area, Staff Communications in the correspondence program in 1983, was judged to be on the negative side of neutral. All other indicators show both the seminar and correspondence students held at least a favorable opinion of the effectiveness of each curriculum sub-area.

Especially noteworthy are the results of the 1984 responses on the Mission Effectiveness and National Security Affairs in the seminar program. These two areas were the only ones rated between positive and highly positive, and were the overall highest rated areas in the seminar program throughout this entire period. The majority of the other ratings have been fairly consistent throughout this survey period.

Generally, these data support the hypothesis that there is no statistical significance between the effectiveness of the two options in accomplishing the mission of ACSC. There are some very minor variances between ratings for each year, but in no case do they exceed .65. Thus, based on the review of the related literature in chapter two, and the analysis of these data, the findings support the major hypothesis of this paper.

## ANALYSIS OF FAILURE AND COMPLETION RATES

### Failure Rates

Reviewing the failure rates, it appears there is a much greater incidence of failures in the correspondence program than in the seminar program. However, applying statistical analysis, at the 95% confidence level there is no difference between the two.

In analyzing the data from Table 3, there is a mean failure rate for the correspondence program of 4.2%, and a standard deviation of 3.8. For the seminar program, there is a mean failure rate of 4.5%, with a standard deviation of 6.7. To ascertain whether these two findings are related, a 95% confidence level test was applied to these results for comparison. In this case the correspondence course results were used as the baseline. With a mean of 4.2%, and a standard deviation of 3.8, a 95% confidence range will include all other mean scores that fall within 1.96 times the standard deviation of the mean. This yields a confidence range of  $4.2 \pm 7.5$ , or -3.3 to 11.7. Since the mean for the seminar program is 4.5%, this is well within the confidence level, and thus indicates no statistical difference between failure rates for the two options. This indicates support for the primary and secondary hypotheses.

### Completion Rates

In comparing mean completion rates for the period, data in Table 4 yields a mean completion rate of 59.5% for the correspondence program, with a standard deviation of 8.4. For the seminar program, there is a mean of 88.5%, with a standard deviation of 7.4. Applying a 95% confidence level test to these indicates there is a significant difference between the two rates.

This is not surprising, however. The motivation for completion in the correspondence course comes primarily from within the officer. On the other hand, in the seminar program many students are either "pushed or pulled" into completing the course by peer pressure. Therefore, this finding refutes the secondary hypothesis.

### ANALYSIS OF AVERAGE TEST SCORES

Review of the average test score data in Table 5 reveals little variance between the scores for the correspondence course with either the two or four-phase seminar program. A visual analysis of the test scores for the correspondence option yields an approximate mean of 80-81%, with an approximate standard deviation of 8. Applying a 95% confidence level test to both two and four-phase seminar options produces no statistical variance.

In order to be significantly different, the scores would have to range below 65, or above 95. Since none fall in these ranges, we can safely state there is no significant difference between test scores for the correspondence or seminar options, and this factor supports the primary and secondary hypotheses.

### ANALYSIS OF ADDITIONAL ACTIVITIES IN THE SEMINAR PROGRAM

A major limitation in this analysis is that the results are based on an extremely small data base. The results and findings are based solely on comparing results of the 201 sample to determinations made by the author in identifying samples of behavior (SOBs) that were supported by additional activities.

In reviewing the data in Table 6, there is a relatively high percentage of SOBs that were supported by discussion questions. There was also a good number of SOBs, nearly half, that were supported by videos or briefings, or both of these plus discussion questions.

Although the 201 results of the tests for forms 03 and 04 do not show any statistical difference, a review of data in Tables 7 and 8 may yield information as to why there is a lower mean, higher standard deviation, and higher first time failure rate for form 04 when compared to form 03. Review of the data shows the percentage of exam questions supported by either discussion questions or videos/briefings is virtually the same. However, in form 04 the number of test questions supported by multiple activities is much lower, with the number of questions with no support being nearly double the percentage in form 03.

Once again, although the findings are based on a very small sample, they do indicate that the additional activities do impact on correctly answering the test questions. This, however, needs to be studied more extensively to make a

positive finding of the net effect of this on the students.

### SUMMARY

In this chapter, the basic findings and results of analysis of survey data from previous student surveys, the failure and completion rates for the two options, and the impact of additional activities in the seminar program have been presented. Basically, there was support for the primary hypothesis in nearly all of the areas studied. Not only did the survey results indicate positive trends for the two programs, so did the more objective data such as test scores and failure rates. Chapter five will now expand on this and present the final conclusions and recommendations.



## Chapter Five

### SUMMARY

### CONCLUSIONS

In chapter one of this paper two hypotheses and five major questions were identified for consideration. The primary hypothesis of this study is there is no significant difference in the effectiveness of the correspondence and seminar programs in accomplishing the mission and goals of ACSC. Further, the secondary hypothesis is there is no significant difference in failure rates, completion rates, or test scores for these two options.

This paper investigated questions concerning the ACSC seminar and correspondence programs. After reviewing all of the data, the findings are as follows:

Question 1 - The survey responses and objective data indicated both the seminar and correspondence options were equally effective in accomplishing the mission and goals of ACSC. Although there was some small variance between the survey responses, that variance was not statistically significant. Therefore, the primary hypothesis is supported by this finding.

Question 2 - Analysis indicated no statistical difference in the failure rates of the two options at the 95% confidence level. Therefore, the primary and secondary hypotheses are supported by this finding.

Question 3 - Analysis indicated there was a statistically significant higher completion rate for the seminar option than the correspondence option. Therefore, this finding does not support, and invalidates, the secondary hypothesis.

Question 4 - Analysis indicated no statistical significance between test scores for the two options.

Therefore, this finding supports the primary and secondary hypotheses.

Question 5 - Analysis indicated the additional activities contribute to the learning process in the seminar option. Indications from a very limited sample support the contention that these additional activities support correctly answering the test questions. Therefore, this finding supports the primary hypothesis.

Not only did the responses from the previous surveys support the primary hypothesis, so did an extensive analysis of the mean failure rates and average test scores. Analysis yielded no statistical difference between the two options. The only factor that was significantly different was the completion rates. Therefore, although the secondary hypothesis is rejected, the primary hypothesis of this study is accepted.

### RECOMMENDATIONS

First, because both the seminar and correspondence options are judged to be accomplishing the goals and mission of ACSC, there should be no major change to either program. Course managers have actively sought to keep the programs current, have implemented various student suggestions from previous researchers, and should continue this policy.

Second, because there is a much higher completion rate for the seminar option than the correspondence option, efforts should be taken by ECI and ACSC to raise the completion rate for the correspondence program. Efforts such as sending out "ticklers" when the student is six and three months away from disenrollment may serve to give the extra "push" required to motivate some students to completion.

Third, although there is no statistical difference between the seminar and correspondence failure rates and test score results, efforts should be taken by ACSC to ensure seminar students profit from the larger educational experience inherent in that program. This could be done by focusing test questions for the seminar program from the briefings, videotapes, or discussion questions. Since the program currently bases its question solely from the readings, students have no way of concretely exhibiting the benefits received from the seminar experience.

Fourth, in the seminar program the discussion questions, briefings, and videotapes should all be focused on the samples

of behavior (SOBs) designed in the lessons. Although a high percentage of these currently support the SOBs, special effort should be made to ensure nearly 100% of them are directly related to the SOBs.

Fifth, the ACSC associate programs staff should continue having resident students conduct surveys to determine opinions on the effectiveness of the programs.

Sixth, future researchers should incorporate analysis of failure rates and average test scores in conjunction with their surveys. While student opinions are good, these additional factors would add much to the credibility of the analyses of the two programs.

Seventh, future surveys should use a one-tail test for the analysis of curriculum sub-areas. In one previous survey, the hypothesis that a specific sub-area supports the ACSC mission was rejected because the responses fell above the 95% confidence level. This indicated there was a higher student assessment of that area than the researcher had projected. Had a one-tail test been employed, this error would not have occurred.

Eighth, there needs to be consistency in the design of the student populations to be surveyed. Future researchers should include all students that have completed any phase of either course in the previous fiscal year. This will coincide with data tabulated by ECI and the ACSC staff concerning student enrollments.

Finally, course managers for the seminar program should review their test construction procedures to ensure all forms of a test are as equally constructed as possible. There should be an effort to design the tests so that the majority of exam questions are supported by the additional activities in order to capitalize in the time invested by the students in these activities.

---

## BIBLIOGRAPHY

---

### REFERENCES CITED

#### Unpublished Materials

1. Alexander, David W., Major, USAF, and Crandler, Crowson, Jr., Major, USAF. "A Study Of the Air Command and Staff College Nonresident Seminar and Correspondence Programs." Research study prepared at the Air Command and Staff College, Air University, Maxwell Air Force Base, Alabama, 1982.
2. Casteel, David R., Major USAF. "A Study of the Air Command and Staff College Correspondence Course." Research study prepared at the Air Command and Staff College, Air University, Maxwell Air Force Base, Alabama, 1984.
3. Grumbles, John L., Major, USAF. "Study and Analysis of the 1984 Air Command and Staff College Correspondence Program." Research study prepared at the Air Command and Staff College, Air University, Maxwell Air Force Base, Alabama, 1985.
4. Huguley, John T., Major, USAF. "A Study of the Air Command and Staff College Associate Seminar Program." Research study prepared at the Air Command and Staff College, Air University, Maxwell Air Force Base, Alabama, 1984.
5. Hulme, David F., Major, USAF. "Air Command and Staff College Associate Seminar Program Evaluation (Graduate Survey and Analysis)." Research study prepared at the Air Command and Staff College, Air University, Maxwell Air Force Base, Alabama, 1985.
6. Joyal, Robert L., Major, USAF. "A Study of the Air Command and Staff College Correspondence Course." Research study prepared at the Air Command and Staff College, Air University, Maxwell Air Force Base, Alabama, 1983.

---

## CONTINUED

---

7. McCall, Michael P., Major, USAF. "A Study of the Air Command and Staff College Associate Seminar Program." Research study prepared at the Air Command and Staff College, Air University, Maxwell Air Force Base, Alabama, 1983.
8. Ranker, Richard A., Major, USAF. "36A Test Results (210 Sample)." ACSC/CAV letter to EP Faculty, 9 Jan 87.

### Other Sources

9. Micrographics Production Center, ECI Monthly Summary By Reason, [Microfiche], Maxwell Air Force Base, Alabama, 1981-1984.
10. Nie, Norman H., Statistical Package for the Social Sciences, [Computer Program], Release 2.0A. Air University Computer Sciences Division, Maxwell Air Force Base, Alabama. (Reports 089CG, 133CG, 427CG, 569CG, 592CG, 608CG, 614CG, 624CG, 626CG), 14 Jan 87.
11. U S Department of the Air Force: Air University. Air Command and Staff College Lesson Leader Guidance Handbooks. Lessons 1-40. Air University, Maxwell Air Force Base, Alabama, 1986.

END

7-87

DTIC